

Original Research Article

Stage at Presentation and Factors Associated with Late Diagnosis of Head and Neck Malignancies at Bugando Medical Center, Mwanza, Tanzania

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Abstract: Background: Head and neck malignancies are often diagnosed at a late stage in sub-Saharan Africa including Tanzania, thus resulting in a generally poor prognosis. The reason for this sad experience is not known. This study was undertaken in our local setting, to describe the stage at presentation and factors associated with late diagnosis of head and neck malignancies at Bugando Medical Centre, Mwanza, Tanzania. **Methods:** This was analytical cross sectional study involving all patients confirmed to have head and neck malignancies at Bugando Medical Center from February to June 2019. **Results:** Out of 60 patients enrolled in the study, 35(58.3%) were males and 25(41.7%) were female making a male to female of 1.4:1. The mean age was 56 [range, 12-89] years. Majority of patients, 44(73.3%) presented with advanced (late) stage of the disease, with stage III been the most prevalent stage accounting for 49.3% of cases. Only one (1.7%) patient had stage I tumor involving the oral cavity. Distant metastasis was documented in only 16.7% of cases. The oropharynx was the most common anatomical site for head and neck malignancies (n=18, 30%). Patients with oropharyngeal malignancies were associated with late-stage presentation whereas those with laryngeal malignancies were associated with early-stage presentation. Patient-related factors such as rural residence (p-value = 0.048) and use of local herbs (p-value = 0.001) were significantly associated with advanced (late) tumor stage at presentation. The level of health care facility first visited (p-value = 0.876) and the number of referrals (p-value = 0.579) were not significantly associated with late stage at presentation. **Conclusion:** This study demonstrated that the head and neck malignancies are not uncommon at Bugando Medical Center and the majority of patients present late with advanced stage cancer. Therefore, increasing awareness among rural residence regarding head and neck malignancies and their symptoms, and training primary healthcare workers to pick up on early symptoms and signs of head and neck malignancies can help address the problem of head and neck malignancies.

Keywords: Head and neck malignancies, stage at presentation, associated factors, Tanzania.

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INTRODUCTION

Head and neck malignancies represent a wide spectrum of malignant neoplasms involving the upper aerodigestive tract (including oral cavity, oropharynx, nasopharynx, hypopharynx and the larynx), paranasal sinuses and salivary glands [1]. Globally, the head and neck malignancies form the sixth most common malignancies and are the most common malignancies in developing countries [2, 3]. The anatomical site affected have important functions such as speech, swallowing, taste and smell, and therefore the cancers and their

treatment may have considerably function sequelae which are importance to life [3].

The most important prognostic factor in head and neck cancer is the stage of the disease at presentation. Early cancer has a better prognosis following treatment [4]. Therefore, public enlightenment, early diagnosis, and effective cost-effective treatment and follow-up are urgently needed to improve outcomes of these patients in our environment [5].

Poverty, illiteracy, advanced stage at presentation, lack of access to health care, and poor

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treatment infrastructure pose a major challenge in management of these cancers. The annual GDP (gross domestic product) spent on health care is very low in developing countries compared to the developed countries [6]. A large proportion of patients with cancer of the head and neck present with advanced disease and this proportion has increased in the past twenty years [7]. The reason for a patient to be diagnosed with advanced disease can be due to the patient's delay in seeking medical care, misdiagnosis by the GP or dentist in primary care who needs to refer the patient, or mismanagement in diagnosing and treating the patient once she/he attends the hospital [7]. A cross-sectional study on head and neck cancers showed that various beliefs of patients, non-availability of transport, ignoring the trivial ulcers in the mouth and believing them to be self-limiting, and prolonged treatment resulting in family stress are important factors in treatment delay [6]. The number of health care institutions dedicated to cancer care is woefully inadequate when compared with Western countries [1, 6].

Head and neck cancers are not uncommon at Bugando Medical Centre and show a trend towards a relative young age at diagnosis and the majority of patients present late with advanced stage cancer [5]. It is found that, at least one new patient in a week visits Bugando Medical Center with head and neck cancer where majority are at advanced or late stage of the disease. This may be attributed by low education, poverty, delayed diagnosis or wrong treatment at primary health care. This study aims to find out what is the stage of disease at presentation at Bugando medical center and factor that made patient present at that stage.

METHODS AND PATIENTS

Study design

This was an analytical cross sectional prospective study involving all patients admitted or attending outpatient clinic and confirmed histopathologically to have head and neck malignancies at Bugando Medical Centre from February 2019 to June 2019.

Study setting

The study was conducted in the ENT and Dental clinics and wards of Bugando Medical Centre (BMC). BMC is found in Mwanza city in the Northwestern Tanzania along the shore of Lake Victoria. It is one of the four tertiary referral hospitals in the country and serves as a teaching hospital for CUHAS and other paramedics. It has a bed capacity of 960 and provides services to approximately 16 million people mainly from northwest Tanzania from last Censuses of 2012. BMC ENT department is one of the surgical departments with a bed capacity of 55. Both ENT and dental departments shares one ward.

Study population

This includes all patients of all age groups and gender with histologically confirmed malignancies of the head and neck treated at Bugando Medical Centre in the departments of Otorhinolaryngology and Dental over a period of study. Unconscious patients without next of kin to consent for the study, patients whom primary tumors couldn't be assessed, and patients who were unable to afford CT scan for completion of staging were excluded from the study.

The minimum sample size of this study was calculated using Yamane Taro. Convenience sampling of patients who met the inclusion criteria was performed until the sample size was reached.

Study variables

Independent variables included sociodemographic characteristics (age, sex, education level, occupation), pathological diagnosis of head and neck malignancies, level of health facility attended, use of local herbs before presenting to hospital, time taken from first hospital visit to first referral to tertiary hospital and number of hospitals/health facilities referred (number of referrals). Dependent variable included stage of the disease at presentation.

Recruitment of patients

Recruitment of patients to participate in the study was done in the ENT and Dental departments by Principal investigator assisted by research assistants. Patients were screened for inclusion criteria and those who met the inclusion criteria were enrolled into the study after informed consent to participate in the study. Clinical staging was done by history taking, physical examination and radiological investigation. Primary tumour size was assessed by physical examination, during routine examination for direct accessible tumours. Inaccessible tumors like laryngeal tumours and nasopharyngeal tumours were assessed using nasopharyngoscopy or during surgery (examination under anesthesia) for taking biopsy. Lymph nodes size was assessed during routine examination by palpating the regional level of nodes draining the respective area involved. Addition staging were done during radiological evaluation using CT scan X rays and ultrasound. Histopathology was used to confirm the diagnosis of malignancy.

Data Collection

Data were collected using a pre-coded structured questionnaire. Variables included in the questionnaire are patients' bio-data, pathological diagnosis, site of the primary tumour, time from onset of first symptoms when consulted first health care, level of the health facility, any treatment given, when first referral given, number of referrals, any alternative medical care sought.

Statistical data analysis

Statistical data were analysed using STATA version 13.0. Data were summarized in form of proportions and frequency tables for categorical variables. Continuous variables were summarized using means with standard deviation or median with interquartile range. P-values were computed for categorical variables using Chi – square (χ^2) test and Fisher’s exact test depending on the size of the data set. Independent student t-test was used for continuous variables A p-value of less than 0.05 was considered to constitute a statistically significant difference.

Data quality control

To ensure internal validity of the study the following precautions was taken into considerations:- The data-collecting tool was pre-tested in 17 patients, research assistants were trained on how to administer the questionnaire and to collect data. The principal investigator ensured completeness and consistency of edited data collected.

Ethical Consideration

Permission was sought from head of department of Otorhinolaryngology. Patient’s refusal to consent or withdraw from the study didn’t alter or jeopardize their access to medical care. The approval to carry out the

study was sought from the Joint CUHAS/BMC Research, Ethics and publication committee (CREC). In this study patients signed a written informed consent for the study. For patient who were unconscious or under the age of 18 years, informant (parent for under 18 years or legally authorized person for those above 18 but unconseous) signed on his/her behalf. Patients were assured that the information collected were maintained under strict confidentiality. The study didn’t interfere with the decision of the attending doctor.

RESULTS

Socio-demographic characteristics of study population

In this study, a total of 61 patients with head and neck malignant were screened for eligibility to participate in the study during the period of study. One patient was excluded from the study because she died before consenting. So, 60 patients were available for the final analysis. Among the 60 patients enrolled, male were 35(58.3%) and female were 25(41.7%) making a male to female of 1.4:1. The mean age was 56 years and ranged from 12 years to 89 years. The majority of patients at diagnosis were in the age group of 60-69 years accounting for 26.7% of cases (Figure 1). Table 1 below shows socio-demographic characteristics of patients.

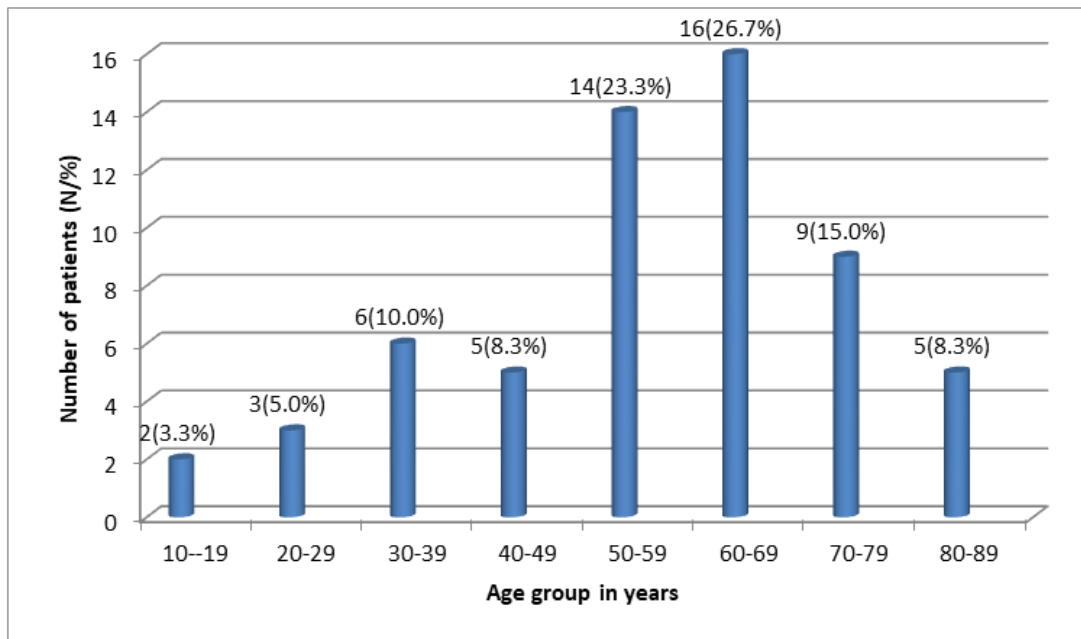


Figure 1: Patient distribution according to age group of study population

Table 1: Socio-demographic distribution of study population

Patients characteristics	Frequency	Percent (%)
Gender		
Male	35	58.3
Female	25	42.7
Age group		
<50	16	26.7
≥50	44	73.3

Patients characteristics	Frequency	Percent (%)
Residence		
Rural	35	58.3
Urban	25	41.7
Education level		
No formal education	17	28.3
Primary school	31	51.7
Secondary school	10	16.7
University	2	3.3

Stage of head and neck malignancies at presentation

Majority of patients, 44(73.3%) presented with advanced (late) stage of the disease, with stage III been the most prevalent stage accounting for 49.3% of cases.

Only one (1.7%) patient had stage I tumor involving the oral cavity. Distant metastasis was documented in only 16.7% of cases (Table 2).

Table 2: Stage at presentation, stage group and distant metastasis status among patients with head and neck malignancies (N=60)

Patients characteristics	Number of patients	Percent (%)
Stage at presentation		
I	1	1.7
II	15	25.0
III	29	49.3
IV	15	25.0
Stage group		
Early stage	16	26.7
Late stage	44	73.3
Distant metastasis status		
With metastasis	10	16.7
Without metastasis	50	83.3

Duration of symptoms before hospital consultation

Hospital consultation ranged from 1 to 50 weeks from the start of symptoms. Majority of patients,

36(60.0%) had their first consultation within 4 weeks of symptoms (Figure 2).

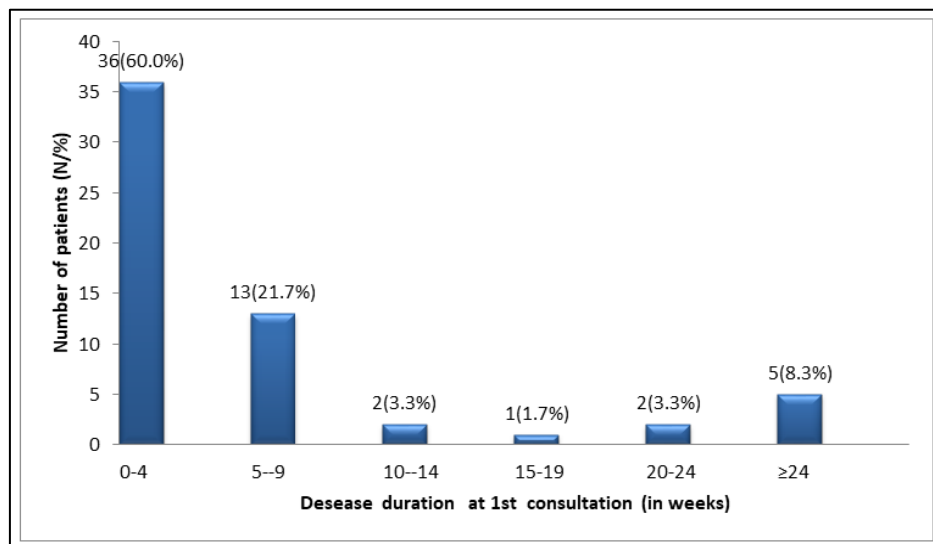


Fig 2: Time taken by patients with symptoms at first consultation.

Patients-related factors associated with late presentation of head and neck malignancies

As shown in Table 3 below, rural residence (p-value = 0.048) and use of local herbs (p-value = 0.001) were significantly associated with advanced (late) tumor

stage at presentation. Factors such as age at presentation (p-value = 0.860), sex (p-value = 0.430) and education level (p-value = 0.860) were not significantly associated with late stage at presentation.

Table 3: Association between patients-related factors and late presentations of HNC

Patient characteristics	Head and neck cancer stage		p-value
	Early stage (N/%)	Late stage (N/%)	
Age group			
<50	3(18.7)	13(81.3)	0.860
≥50	13(29.5)	31(70.5)	
Area of residence			
Rural	6 (17.1)	29 (82.9)	0.048
Urban	10 (40.0)	15 (60.0)	
Local herbs users			
Yes	6 (14.3)	36 (85.7)	0.001
No	10(55.6)	8(44.4)	
Education level			
No formal education	4 (23.5)	13 (76.5)	0.062
Primary school	6 (19.4)	25 (80.6)	
Secondary school	6 (60.0)	4 (40.0)	
University/collage	0 (0.0)	2 (100.0)	
Sex			
Male	8 (22.9)	27 (77.1)	0.430
Female	8 (32.0)	17 (68.0)	

0-4 5-9 10-14 15-19 20-24 >=50

Health care related factors in delay presentation of head and neck malignant

Most patients 25(41%) visited dispensary as their first health care facility to seek for treatment. This was followed by hospital level which comprised of district hospital, regional hospital and BMC. Patient with first visit to dispensary presented with late stage 19 (43.18%) than those who consulted higher levels of health care for their first time, 14 (31.82%) for hospital level and 11 (25.00%) for health center. From the study,

31patients have 2 numbers of referrals, 13 have only one referral and 16 have more than two referrals. It shows that, with increase number of referrals, the number of patients presenting with late stage also increases. Table 4 below shows, of the patients with late stage, 22.75% had 1 number of referral, 47.73% had two referrals and 29.55% had more than two referrals. The level of health care facility first visited (p-value = 0.876) and the number of referrals (p-value =0.579) were not significantly associated with late stage at presentation.

Table 4: Health care related in late presentation of head and neck cancer

Healthcare characteristics	Stage at presentation		p-value
	Early stage (N/%)	Late stage (N/%)	
Level of 1st health care visited			
Dispensary	6 (37.50)	19 (43.18)	0.876
Health center	5 (31.25)	11 (25)	
Hospital	5 (31.25)	14 (31.82)	
Level of health care patient referred from			
Dispensary	0 (0.00)	1 (2.27)	
Health center	2 (12.50)	2 (4.55)	
District hospital	4 (25.00)	15 (34.09)	
Regional hospital	10 (62.50)	26 (59.09)	
Number of referrals			
1	3 (18.75)	10 (22.75)	0.579
2	10 (62.50)	21 (47.73)	
>2	3 (18.75)	13 (29.55)	

Anatomical location of primary tumor and stage of disease presentation

Oropharyngeal area constituted the majority of patients with HNC and majority of them presented with

advanced stage 14 (31.82%) followed by larynx. Contrary to oropharynx, the larynx constituted large number of patients with early stage of the disease 5 (31.25%) same as that found in sinonasal area. Patient

with cancer of thyroid, hypopharynx and salivary gland, all presented with advanced stage Fig 3.

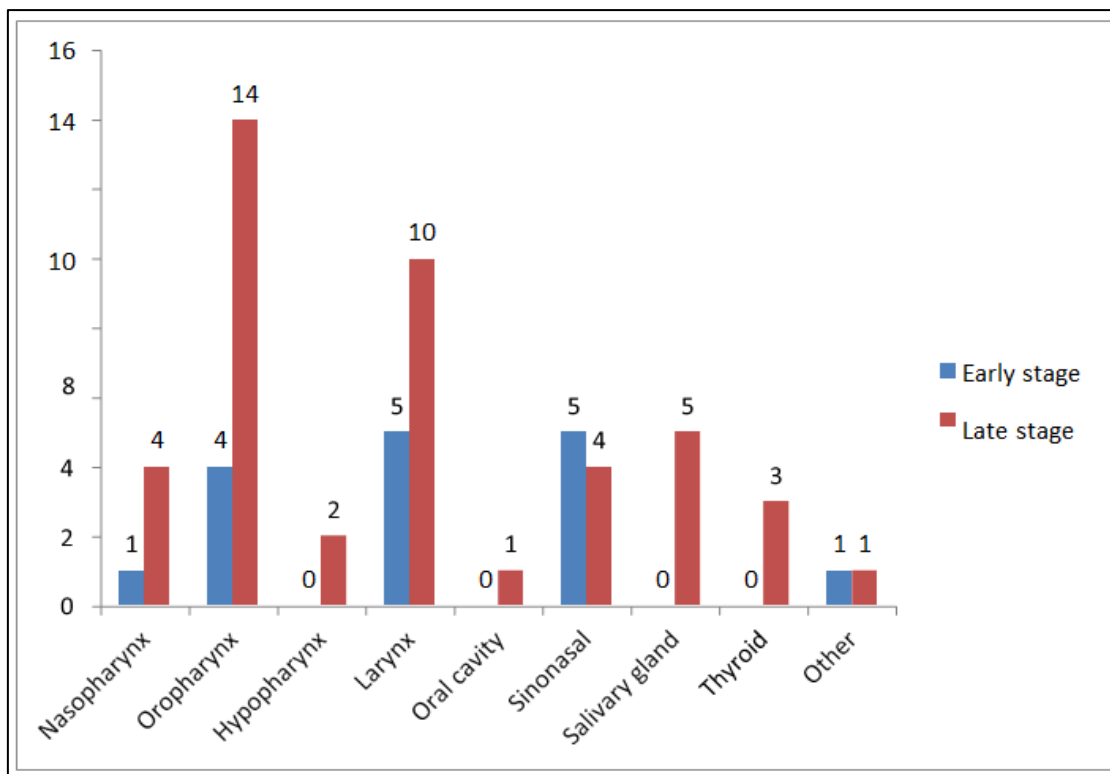


Figure 3

DISCUSSION

Head and neck cancers are common cancers occurring worldwide and its incidence is on rise in developing countries including Sub Sahara countries [1-3]. Majority of patients are presenting with advanced stage that poses challenges during management [3-5]. This study was done to assess the stage at presentation and associated factors for late diagnosis of head and neck malignancies in our setting.

In this study, the median age at presentation was 56 years. This is keeping with other studies done in Africa and outside Africa [2, 5, 8]. Male were affected more than women with ratio of men to women being 1.4:1. This is also in line with other studies [2, 5]. However, in this study the ratio of male to female was high compared to other previous studies which indicated that the number of female is on rise [9]. Age and gender showed no statistically significant association with the stage at presentation of head and neck malignancies in our study.

As reported in other studies in sub-Saharan Africa [2-7], more than half of patients in this study came from the rural areas. Multiple studies have documented that rural patients experience disproportionately adverse cancer related outcomes, compared to their urban counterparts [4-7]. Majority of rural residence patients with head and neck malignancies presents to health

facility with late stage attributing this to inequities in access to healthcare, monetary and technological resources, disease characteristics, adverse health status and lower life expectancy of rural populace. In this study, rural residence was significantly associated with late stage at presentation. This finding concurs with what was found in Uganda and Tanzania [5, 8]. Rural residents have less access to tertiary care centers, specialized medical professionals, and public transportation, all of which can cause significant delays in diagnosis and treatment [8].

In this study, majority of patients had primary level of education followed by those without formal education and few had tertiary education. This finding agrees with other studies from Kenyatta Hospital and western Uganda [4, 8]. Despite lack of statistical association between educational level and late stage at presentation in this study, we believe that lack of education could affect the level of awareness and recognition of cancer symptoms and treatment as shown in previous studies [10, 11].

It has been documented that the use of local herbs is generally high among patients with cancer in Tanzania and most use it before consulting a medical doctor, which contributes to delay in diagnosing and eventually treatment of the cancer disease [5, 12, 13]. In this study, the majority of patients with head and neck malignancies (70%) used local herbs before consulting a

doctor, which contributes to late stage presentation. The finding that the use of local herbs was significantly associated with advanced (late) tumor stage at presentation in this study is in keeping with other studies in African countries [4, 5]. The high proportion of head and neck cancer patients using local herbs before seeking care at a hospital is alarming in our setting and reflects the need for increasing awareness regarding head and neck cancer and its treatment. Efforts must be taken to educate patients on the relevance of timely presentation and treatment initiation of cancer diseases.

In the present study, the oropharynx constituted the most common anatomical site for head and neck malignancies, but at variance with what was reported in Nigeria, in which nasopharynx was the most common site [14]. One study in Kenya reported the larynx as the most common site affected anatomical site [4]. Sinonasal cancer was the commonest malignancy at Muhimbili National Hospital, Dar es Salaam, Tanzania [2]. We could not establish the reason for this anatomical difference among these countries, but may have to do with variations in geographical location and the socio-cultural practice of the people in that region. Findings from this study have documented that patients with oropharyngeal malignancies were associated with late-stage presentation as compared to tumors in larynx which was associated with early-stage presentation. Similar anatomical site distribution was also reported in Uganda [8]. The finding that oropharyngeal malignancies in this study were associated with late presentation can be explained by the fact that tumors in this anatomical site have obscured symptoms as a result of their hidden anatomical disposition and when symptoms present, the disease has already advanced. This is in contrast to laryngeal malignancies which are associated with early-presentation attributing this to the fact that the presence of a laryngeal tumor will cause hoarseness and especially upper airway obstruction necessitating early presentation and explains the early presentation noticed in patients with laryngeal malignancies.

In the present study, more than 70% of patients in this study presented to our centre late with advanced stage. This finding is in line with several reports from Africa [2-7]. The late stage at presentation in this study may be due to poor health care facility, lack of professional doctors to diagnose and refer earlier for timely management especially in rural area which occupy majority of population in this study.

Duration of symptoms ranged from 1 week to 101 weeks before first health care consultation. This is more similar with other studies done at Kenyatta national hospital, Mbarara Uganda and Muhimbili national hospital where patients delayed to visit health facility within equal interval [4, 5, 8]. Despite the fact that 60% had first consultation at health care facility within 4 weeks, a large number presented at our centre with advanced stage. This may be due to the majority were

treated medically in the peripheral health facilities for wrong diagnosis.

A total of 25 (41%) patients preferred visiting dispensary at their first consultations, likely due to limited access to higher levels and national referral system. The same finding was found in the study done at Kenyatta hospital. For patients who presented with late stage, the majority (43%) were those who visited dispensary at their first consultation. Majority of patients passed through at least one referral to several referrals before coming at BMC. Those who went through one referral and several referrals had no difference in terms of stage presented at our Center. This was quite different from the studies done in Kenya and Uganda [4, 8]. This may be attributed by those looking for traditional medical care that presented to health care with advanced disease and referred to BMC directly for obvious disease. For those who had many referral, have been treated for none specific symptoms with wrong diagnosis until the disease is advanced. Whether patient first visited dispensary level or hospital level, there were no differences in stage presentation at our center. The regional hospital has majority of patients presented with early stage (62.5%) as compared to other levels. May this is because patients have to pass through regional hospital (referral hospitals) for being referred to our Center (consultant hospital).

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study demonstrated that the head and neck malignancies are not uncommon at Bugando Medical Center and the majority of patients present late with advanced stage cancer.

The oropharynx was the most common anatomical site for head and neck malignancies Patient-related factors such as rural residence and use of local herbs were significantly associated with advanced (late) tumor stage at presentation. Therefore, increasing awareness among rural residence regarding head and neck malignancies and their symptoms, and training primary healthcare workers in dispensaries and health center on how to suspect patients with head and neck malignancies at early stage and refer them direct to tertiary hospital without passing through series of referrals can help address the problem of head and neck malignancies.

REFERENCES

1. Tobias, J. S. (1994). Cancer of the head and neck. *BMJ: British Medical Journal*, 308(6934), 961.
2. Mwansasu, C., Liyombo, E., Moshi, N., & Mpondo, B. C. (2015). Pattern of head and neck cancers among patients attending Muhimbili National Hospital Tanzania. *Tanzania Journal of Health Research*, 17(1).
3. Mehanna, H., Paleri, V., West, C. M. L., & Nutting, C. (2010). Head and neck cancer—Part 1:

- Epidemiology, presentation, and prevention. *Bmj*, 341, c4684.
4. Onyango, J. F., & Macharia, I. M. (2006). Delays in diagnosis, referral and management of head and neck cancer presenting at Kenyatta National Hospital, Nairobi. *East African medical journal*, 83(4), 85-91.
 5. Gilyoma, J. M., Rambau, P. F., Masalu, N., Kayange, N. M., & Chalya, P. L. (2015). Head and neck cancers: a clinico-pathological profile and management challenges in a resource-limited setting. *BMC research notes*, 8(1), 1-9.
 6. Joshi, P., Dutta, S., Chaturvedi, P., & Nair, S. (2014). Head and neck cancers in developing countries. *Rambam Maimonides medical journal*, 5(2).
 7. Tromp, D. M., Brouha, X. D., Hordijk, G. J., Winnubst, J. A., & de Leeuw, J. R. J. (2005). Patient factors associated with delay in primary care among patients with head and neck carcinoma: a case-series analysis. *Family practice*, 22(5), 554-559.
 8. Nabukenya, J., Hadlock, T. A., & Arubaku, W. (2018). Head and neck squamous cell carcinoma in Western Uganda: disease of uncertainty and poor prognosis. *Oto Open*, 2(1), 2473974X18761868.
 9. da Lilly-Tariah, O. B., Somefun, A. O., & Adeyemo, W. L. (2009). Current evidence on the burden of head and neck cancers in Nigeria. *Head & neck oncology*, 1(1), 1-8.
 10. Bhattacharyya, P., Mukherjee, D., Barman, S., Dey, T. K., & Biswas, J. (2016). Factors responsible for the diagnostic delay in oral cancer patients: A hospital based sociodemographic study in Kolkata. *Bengal Journal of Otolaryngology and Head Neck Surgery*, 24(3), 141-147.
 11. Kumar, S., Agarwal, S. P., & Gupta, C. K. (1993). Investigation of factors causing delay in the treatment of oral mucosal cancer. *Indian J Oral Maxillofac Surg*, 8(2), 41-47.
 12. Felippu, A. W. D., Freire, E. C., Silva, R. D. A., Guimarães, A. V., & Dedivitis, R. A. (2016). Impact of delay in the diagnosis and treatment of head and neck cancer. *Brazilian journal of otorhinolaryngology*, 82, 140-143.
 13. Yu, T., Wood, R. E., & Tenenbaum, H. C. (2008). Delays in diagnosis of head and neck cancers. *Journal of the Canadian Dental Association*, 74(1).
 14. Kodiya, A., Adamu, A., Nggada, H., Garandawa, H., Ngamdu, Y., Sandabe, M., & Isa, A. (2016). Epidemiology of head and neck cancers in Maiduguri-Northeastern Nigeria. *British Journal of Medicine and Medical Research*, 11(5), 1-7.

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